

User Manual

SR...LI Smartcharger for Li-ion Batteries

100 ~ 750W



ISO9001
Certified

Safety

The user is responsible for ensuring that input and output wiring segregation complies with local standards and that in the use of the equipment, access is confined to operators and service personnel. A low resistance earth connection is essential to ensure safety and additionally, satisfactory EMI suppression (see below).

HAZARDOUS VOLTAGES EXIST WITHIN A POWER SUPPLY ENCLOSURE AND ANY REPAIRS MUST BE CARRIED OUT BY A QUALIFIED SERVICEPERSON.

Electrical Strength Tests

Components within the power supply responsible for providing the safety barrier between input and output are constructed to provide electrical isolation as required by the relevant standard. However EMI filtering components could be damaged as result of excessively long high voltage tests between input, output and ground. Please contact our technicians for advice regarding electric strength tests.

Earth Leakage

The EMI suppression circuits causes earth leakage currents which may be to the maximum allowable of 3.5mA.

Ventilation

High operating temperature is a major cause of power supply failures, for example it has been well documented that a 10°C rise in the operating temperature of a component will halve its expected life. Therefore always ensure that there is adequate ventilation for the equipment. Batteries and cooling fans also suffer shortened lifetimes if subjected to high ambient temperatures - both should be included in a routine maintenance schedule to check for signs of reduced efficiency.

Water / Dust

Every effort must be made in the installation to minimise the risk of ingress of water or dust. Water will almost always cause instant failure. The effects of dust are slower in causing failure of electronic equipment but all electrical equipment should be cleaned free of any dust accumulation at regular intervals.

Electromagnetic Interference (EMI)

Switching power supplies and converters inherently generate electrical noise. All wiring should be as short as practicable and segregated from all equipment wiring which is sensitive to EMI. Residual noise can be reduced by looping DC wiring through ferrite cable sleeves. These are most effective as close to the power supply as possible and as many turns of the wire taken through the core (+ and - in the same direction) as the core will accommodate.

Fuse ratings

Check that the wiring and fuses or MCBs match the rating of the PSU or converter. Note that the Innovative Energies *No-Break™* DC chargers are able to deliver up to 2.5 times the rated current when mains power is on.

Connection polarity

It is critical to check the polarity carefully when connecting DC devices. Some Innovative Energies models have reverse polarity protection (RPP), for example, the *Smartchargers* have electronic (non-destructive) RPP, the *No-Break™* DC range has an internal fuse which needs to be replaced if the battery is connected in reverse. Usually, however, a reverse polarity connection results in instant destruction of the device, especially if there is a battery involved.

Glossary of terms used in our user manuals

PSU = power supply unit

BCT = battery condition test

ECB = electronic circuit breaker

ELVD = electronic low voltage disconnect

RPP = reverse polarity protection

EMI = electromagnetic interference

SNMP = Simple Network Management Protocol

LAN = local area network



◆ 24 Month Warranty

- Designed to industrial standards for cyclic re-charging of Li-ion batteries
- Not intended for use with standing loads
- Reverse polarity protection
- Operating state and fault indication
- Optional relay alarm outputs (SR... LIE versions)
- Constant current charge followed by constant voltage charge
- Adjustable time out (default setting 10hours)
- Mains fail during charging alert
- LED indication
- Front panel controls (except SR100LI)
- Battery over temperature cut out

SPECIFICATIONS All specifications are typical at nominal input, full load and at 20°C unless otherwise stated.

ELECTRICAL

Input Voltage	180V - 264V, 45-65Hz 88V - 132V , 45-65Hz (optional)
Input protection	Internal fuse
Output protection	Automatic shutdown if battery leads reversed
Current limit	Set to customer specification
Isolation	1KV DC input - output / earth
Efficiency	≥ 85%
Inrush current	Soft start
Output power	100, 250, 500, 750W
Output Voltages	9.5 - 55.5V (set to customer specification)
Voltage adj. range	Approx 95 - 105% of V nominal
Charge Time Setting	Set to customer specification
Output Protection	Adjustable (default = 10 hours)
Line Regulation	<0.2% over input range
Load Regulation	<0.4% open circuit to 100% load
Noise	<0.1%
Thermal Protection	Battery overtemp. cutout at 65°C
OVP	Over-voltage protection on output at ~ 130% of nominal output voltage
EMI compliance	to CISPR 22 / EN55022 class A

ENVIRONMENTAL

Operating temperature	0 - 50°C ambient at full load De-rate linearly >50° C to no load @ 70° C
Storage temperature	-10 to 85 °C ambient
Cooling	Natural or fan cooled depending on model

CONTROL

Switch functions (not on SR100LI)	STATUS 2: Restarts charge cycle after time out
	STANDBY: Push button to turn output off

LED INDICATION

Status 1 (red)	Status 2 (green)	Description
Off	Flash	Charging (constant current)
Off	On	Charged *1
Off	Occulting *4	Charged and timed out
Flash	Off	Standby*2, Charger or Mains Fail
On	Off	Timed out during CC phase *3
Alternate fast flash		Over Temp. (charging terminated)

*1. charge current drops to <50% max current

*2. Not available 100W

*3. battery capacity too high for charger or battery faulty

*4 Occulting = LED flashes with 'on' state longer than 'off' state

OPTIONAL ALARM RELAY OUTPUTS : On = Energised

STATUS 1	STATUS 2	DESCRIPTION
On	On	Charging
On	Off	Charged
Off	Off	Stand-by/Charger or Mains fail, Charged
Off	On	Stand-by/Charger or Mains fail, Battery not charged

PHYSICAL

AC Input connector	IEC320 socket with NZ/Aust. power cord
DC Connections	M6 brass stud or plug-in socket with screw terminals
Enclosure	Powder coated / zinc plated steel
Dimensions	SR100LI: (no alarm version) 147 x 177 x 62mm, 1kg SR250LI(E): 150 x 242 x 61mm, 1.7kg SR500/750LI(E): 223 x 340 x 70mm, 4.3kg
Safety	to IEC950 / EN60950 / AS/NZS3260

CONNECTION PROCEDURE

Connect the battery leads before turning mains power on.

Connect the positive (+) output of the charger to the positive terminal of the battery.

Connect the negative (-) output of the charger to the negative terminal of the battery.

The charging status is indicated by the LEDs according to the table on page 3 of this booklet.

REVERSE POLARITY CONNECTION

The charger is protected against the connection of a reversed battery if the charger is powered down or in stand-by mode. If a reversed battery is connected to the charger while it is switched 'on' it might be possible that it is damaged.

OPERATION

The chargers will under normal operational conditions and with a discharged battery start with a CC (constant current) Phase followed by CV (constant voltage) Phase.

When the charge current has fallen to 50% a 'charge complete' indication is given.

After a time of 10hours from the start of charge the charger will reduce the output voltage to stop charging and give a 'charge timed-out' indication.

WARNING - STANDING LOADS

Not intended for standing loads

TIMEOUT & MAINS-FAIL

The timeout is set to 10hours.

If a mains fail occurs during charging the timer is on hold until mains returns and charging continues.

After a complete and timed out charging cycle any mains fail will be ignored. If the timeout occurs before the current has dropped to 50% an error signal (RED LED) is given (*Not available on SR100LI*).

The charged status LED button on the SR250/500/750 can be pressed after a timeout to reset the timer and restart the charge cycle.

CONTROLS (*except SR100LI which does have front panel switches*)

STATUS 2: Restarts charge cycle after timeout

STANDBY: Push button to turn output off

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TERMS OF WARRANTY

Innovative Energies Ltd warrants its power supplies for 24 months (two years) from date of shipment against material and workmanship defects.

Innovative Energies' liability under this warranty is limited to the replacement or repair of the defective product as long as the product has not been damaged through misapplication, negligence, or unauthorized modification or repair.